

Influencing Mechanism of Linguistic Network to Animation Performance*

A Perspective of Meaning Innovation

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Abstract—Linguistic network plays a key role in animation design innovation. With a review on linguistic network and meaning innovation, this study presents a conceptual model about the influencing mechanism of linguistic network to animation performance through meaning innovation processes. The hypotheses are then validated, and the result suggests management solutions for firms to improve their animation performance.

Keywords—linguistic network; animation value; meaning innovation

I. INTRODUCTION

In 2015, 134,000 minutes of cartoon have been made in China, ranking first in quantity in the world. And the total output value reached 120 billion RMB. However, there is still a wide gap between Chinese animation industry and the developed countries'. Also in 2015, the output value of animation industry in United States was more than 200 billion US dollars. In Chinese animation market, the local original animations only have 11% of the share, and the rest is mainly occupied by the US and Japan.

How can Chinese animation firms enhance performance? To solve this problem, this paper focuses on cartoon creation and value realization. Based on linguistic network and meaning innovation theory, it explores the influencing mechanism of linguistic network to animation performance through meaning innovation processes. With a questionnaire survey, confirmatory factor analysis (CFA) and structure equation model (SEM) are used to empirically test. And the result suggests management solutions for firms.

II. THEORY BACKGROUND AND CONCEPT FRAMEWORK

A. Theory Background

How do animation firms create value? And how do they organize themselves and network?

Meaning innovation theory may be the best answer to these

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questions. Most researchers agreed upon the importance of technology innovation. And in recent years, some researchers went one step further: they demonstrated that innovation could also come about through change in meaning.^[1]

Meaning is the symbolic and emotional value in product or service. Traditionally, this role of creating breakthrough product meanings by acting on the semantic dimension of products was that of adesigner.^[2-4]

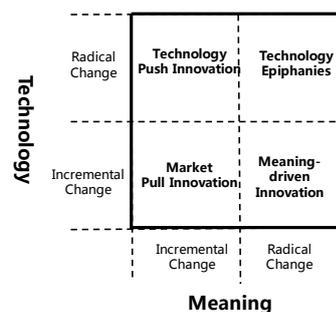


Fig. 1. The two dimensions and four types of innovation (Source: reference[11])

The framework of Figure 1 connects the two dimensions of technology and meaning, which define four types of innovations.^[1] Animation creation is driven by radical meaning change. US animation, which combine technology and meaning, is located in the 'Technology Epiphanies' interval. And Japanese animation, which is driven by socio-culture, is located in the 'meaning-driven innovation' interval.

Linguistic network is essential to meaning innovation. The term linguistic network means the set of actors and relationships that (1) identify, capture and interpret socio-cultural trends, and (2) embed the results of these analyses into products. Through this type of network, a firm can develop products that "speak" particular languages to meet consumer needs. Linguistic network consists of managers, designers, socio-culture researchers and product developers.^[2, 3]

A new framework is provided to look at meaning innovation as interpreting (of developing meaningful scenarios rather than finding an optimal solution) and envisioning (of

imaging experiences that are still not asked for, rather than answer to existing needs) processes.^[5]

B. Research Hypotheses and Concept Framework

In the following sub-paragraph, research hypotheses are introduced to describe relationships among linguistic network, meaning innovation (interpreting and envisioning) processes and animation performance. According to meaning innovation theory and animation practice, we can regard interpreting as creating a new narrative semiotic system (world setting, characterization, etc.), and envisioning (reiterate, appropriate and even parodize in a creative way) as using this kind of system.^[6-9] Since meaning innovation processes are essential to the animation performance, there we posit the following:

H1: The firm's meaning innovation processes will have a positive effect on the animation performance.

H1a: The firm's interpreting process will have a positive effect on the animation performance.

H1b: The firm's envisioning process will have a positive effect on the animation performance.

For interpreting process is ahead of envisioning process, there we posit the following:

H2: The firm's interpreting process will have a positive effect on the envisioning process.

According to resourced-based view, firms' resource influences the performance through the processes. And linguistic network are looked as the most important resource for meaning innovation. The position and the degree of involvement in meta project activities influence the meaning innovation processes. There we posit the following:

H3: The firm's position in Linguistic Network will have a positive effect on the meaning innovation processes of animation.

H3a: The firm's position in Linguistic Network will have a positive effect on interpreting process of animation.

H3b: The firm's position in Linguistic Network will have a positive effect on envisioning process of animation.

H4: The firm's degree of involvement in Linguistic Network will have a positive effect on the meaning innovation processes of animation.

H4a: The firm's degree of involvement in Linguistic Network will have a positive effect on interpreting process of animation.

H4b: The firm's degree of involvement in Linguistic Network will have a positive effect on envisioning process of animation.

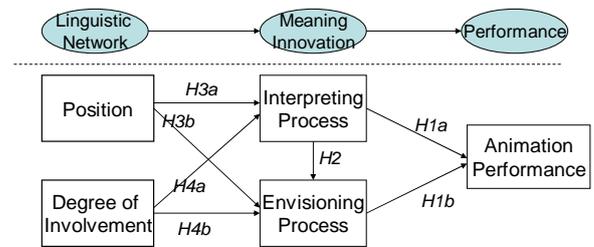


Fig. 2. Concept Framework

The concept framework about influencing mechanism of linguistic network to animation performance is showed in Figure 2.

III. ANALYSIS AND DISCUSSION

A. Data and Methods

We used a survey to collect data to test our hypotheses, which were analyzed through a factor analysis and structure equation model analysis.

An questionnaire has been distributed among 226 CEOs or chief designers of animation firms in Zhejiang Province, China. The results from the pretest showed no particular bias. The 5-point Likert scales are hired in the questionnaire. We revised the data of these items accordingly. Cronbach's alphas were calculated, and all of them exceeded the recommended good reliability level of 0.80.

B. Measures and CFA results

We first conducted a confirmatory factor analysis (CFA) using AMOS 21.0 to determine the validity and reliability of our measures. The factor loadings for each individual indicator on their respective constructs were all statistically significant ($P < 0.01$), establishing convergent validity. Since our research contain several multi-item scales, we investigated the psychometric properties of the measures through the composite reliability index and average variance extracted the recommended benchmarks of 0.70, respectively (Table 1).

TABLE I. MEASUREMENT MODEL RESULTS

Construct	measurement items	AVE	CR
Position in Linguistic Network	Density of network	0.82	0.75
	Size of network		
	Centrality of network		
	Structure Holes		
Degree of involvement in Linguistic Network	Strenght of relationship	0.91	0.77
	Stability of relationship		
	Trust of relationship		
Interpreting Process	Socio-culture context recognition	0.88	0.72
	Design scenarios of meaning		
	Debating		
Envisioning Process	Building critical capability	0.79	0.80
	Envisioning new meaning		
	New technology application		
Animation Performance	Sales	0.84	0.82
	Profit		
	Reputation		
	Award		

IV. RESULTS

A. Structural model analysis

Given the results of the measurement model assessment, wenext examined a structural model. The results are summarized in Fig. 2. The fit indices for the overall model were as follows: $\chi^2=502.5$, CFI=0.92, RMSEA=0.08, TFI=0.91, IFI=0.93. These values collectively indicate that the structural model has an acceptable fit.

B. Main Paths

In H1, we hypothesize the original path of meaning innovation processes to animation performance. The coefficient of H1a(interpreting process to animation performance) was statistically significant(Standard coefficients=0.44, $p<0.001$), while The coefficient of H1b (envisioning process to animation performance) was statistically significant(Standard coefficients=0.47, $p<0.001$). Thus, H1 was supported.

In H2, we hypothesize the original path of interpreting processes to envisioning process. The coefficient of H2 was not statistically significant(Standard coefficients=0.19, $p>0.05$). Thus, H2 was supported.

In H3, we hypothesize the original path of position in linguistic network to innovation processes. The coefficient of H3a(position in linguistic network to interpreting process) was statistically significant(Standard coefficients=0.66, $p<0.001$), while The coefficient of H1b(position in linguistic network to envisioning process) was statistically significant(Standard coefficients=0.24, $p<0.001$). Thus, H3 was supported.

In H4, we hypothesize the original path of degree of involvement in linguistic network to innovation processes. The coefficient of H4a(involvement in linguistic network to interpreting process) was not statistically significant(Standard coefficients = 0.19, $p>0.05$), while The coefficient of H1b(involvement in linguistic network to envisioning process) was statistically significant(Standard coefficients=0.44, $p<0.001$). Thus, H4 was partly supported.

These Paths are showed in Table 2 and Figure 3.

TABLE II. STRUCTURAL MODEL RESULTS

Paths	Standard coefficients	SE	CR	
Position in linguistic network → Interpreting process	0.66	0.10	0.75	***
Position in linguistic network → Envisioning process	0.24	0.09	4.56	***
Degree of involvement in linguistic network → Interpreting process	0.19	0.08	1.19	n.s
Degree of involvement in linguistic network → Envisioning process	0.44	0.11	4.42	***
Interpreting process → Animation Performance	0.44	0.09	6.44	***
Envisioning process → Animation Performance	0.47	1.09	5.23	***
Interpreting process → Envisioning process	0.07	0.08	1.52	n.s

*** $p<0.05$, ** $p<0.01$, n.s. no significant

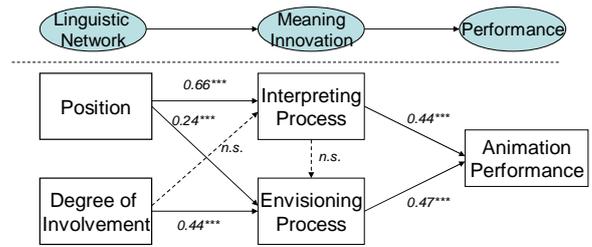


Fig. 3. Structural Model Results

Note: ** $p<0.05$, *** $p<0.01$, n.s. no significant

V. CONCLUSION

A. Implications for research and practice

This study makes an important contribution to the animation industry theory, by claiming that the role of meaning innovation processes plays a key role in animation performance. Our model is an extension of linguistic network theory. Based on the results obtained from 226 animation firms, we attempt to draw the following implication.

Theoretically, our hypotheses testing results clearly supported the influencing mechanism of linguistic network to animation performance through meaning innovation processes. There are three paths to improve animation performance. They are position in linguistic network → interpreting process → animation performance (Path 1), position in linguistic network → envisioning process → animation performance (Path 2), and Degree of involvement in linguistic network → interpreting process → animation performance (Path 3).

In today's China, a lot of animation firms try to enhance their performance in Path 3. The result shows that they should pay more attention on Path 1 and 2, which help improve their interpreting capability.

The result also suggests that open society is necessary for animation performance. As noted above, the debating and critical capability only can be improved in the open society. And Government plays a key role of encouraging the firms to share their knowledge in the linguistic network.

B. Limitation and further research

This study has some limitation. Firstly and foremost, our scale may not have captured all necessary elements of the linguistic network and meaning innovation concept. In this respect, further research should attempt to develop a measurement that captures the full scope of dimensions such as cognitive consistency in linguistic network. Secondly, our respondents provided data for both independent and dependent variables. Studies employing single-source methodology may be biased by artificially high inter-correlations, because of an overall positive or negative response bias. Further research should seek multi-source data. Thirdly, this study focuses on the linguistic network outside of the firms. Future research should pay more attention on the actors network inside of the firm. Finally, case studies should be adopted in the future.

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